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WASHINGTON, D.C.

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THE NRO STAFF

March 7, 1973

NOTE FOR DR. STEININGER, CIA

This is the new NSSM-72 draft. Please note that the only common member of the black (156) and white (NSSM 72) Working Committees concerned with space observation is Dave Elliot. This paper is extremely insensitive to the on-going space reconnaissance aspects and the need for protecting that environment. The way the paper is thrusts implies that the U.S. must protect its right to observe. This is, on the surface, the only logical policy. But what does not come through in the paper, mainly because of the group working it, is that if the U.S. is willing to pursue an openly conducted and perhaps intrusive observation program, this is not analogous to what the U.S. has been doing covertly. There is a fundamental difference in telling and not telling others what you are doing. I am afraid that any policy which publicly advocates open observation on a "right to observe" basis may backlash and eventually bring about sufficient adverse reaction in the UN and other forums which would seriously degrade the reconnaissance program's "right to observe." There appears to be some urgency now in dove-tailing the real issue in space observation, i.e., perpetuation of the reconnaissance environment, with the options brought forth in the draft NSSM-72. Perhaps NSSM-72 should be held in abeyance until assurances are had that "black" activities will be protected by an announced U.S. space policy.

DOS and NRO
review(s) completed.**DD/S&T
FILE COPY**Assistant Deputy Director
for Plans and Policy

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1 Attachment
NSSM Study

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Washington, D.C. 20520

BUREAU OF INTERNATIONAL SCIENTIFIC
AND TECHNOLOGICAL AFFAIRS

February 27, 1973

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MEMORANDUM

TO : NSSM-72 Committee*

FROM : Herman Pollack, Chairman

SUBJECT: NSSM Study of Policy Options Relating to
International Cooperation in Earth Resource
Surveying by Satellite

It is becoming increasingly clear that policy decisions will be needed soon with regard to the international aspects of earth resource surveying. The attached draft NSSM report outlines the implications and consequences of a number of possible policy options.

In the interest of bringing this study to an early conclusion, I would appreciate receiving by Friday, March 9, such comments as you may wish to put in writing at this stage.

I am also calling a meeting of the NSSM-72 Committee at 2:00 p.m., Friday, March 16, in Room 7835 of the State Department, to discuss the attached draft.

Attachment:

Draft NSSM-72 Report on
ERS, with Annex

*NSSM-72 Committee:

NASA - Mr. Frutkin
Department of Agriculture - Dr. Byerly
Department of Commerce - Mr. Nels Johnson
Department of Defense - Dr. Mountain
Department of Interior - Dr. Dunover
NSC Staff - Dr. Elliott
NASC - Mr. Anders
CIEP - Dr. Weiss
OST - Mr. Lyon
AID - Dr. Schweitzer
ACDA - Mr. Henkin

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POLICY OPTIONS RELATING TO INTERNATIONAL COOPERATION
IN EARTH RESOURCE SURVEYING BY SATELLITE

Introduction

For the purposes of this NSSM report, earth resource surveying (ERS) is defined as the acquisition for civil purposes of information pertaining to the earth's resources by means of sensors mounted on spaceborne platforms. Surveys involving aircraft, sounding rockets, balloons or surface exploration are not considered.

It is further noted that US policy covering the international aspects of the experimental period of ERS has been established, announced and put into practice along lines described in the Annex to this report. The policy guidelines analyzed under the various options of this report are therefore intended to apply to the operational period of ERS, a period which will presumably commence during the second half of the present decade.

More precise definitions of "ERS" and the terms "experimental" and "operational" are given in the Annex to this report.

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Objectives of ERS Policy

Assuming that the present experimental phase of ERS justifies the hope that this new technology is capable of producing a very high benefit/cost ratio, it will be the US objective, in general terms, to establish an operational ERS satellite system which will be responsive to public needs and national goals and which will contribute to world peace, understanding and economic development.

The manner and degree to which this general policy objective is met will depend in large measure on decisions which must be made in three inter-related areas:

- Dissemination of operational ERS information ("Dissemination Options")
- The organization of operational ERS activities ("Organization Options")
- The extent to which we should accept restrictions on acquisition of ERS information. (Observation Options")

It will become clear in the discussion which follows that our choices among the options in these four areas will not be entirely independent. For example, a restrictive, US-oriented decision with regard to international

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dissemination of ERS information will certainly increase the incentives of other nations toward establishing their own ERS systems, may intensify the assertion of proprietary rights over resource information, and may also give rise to pressures on the US to restrict or forego the "right to observe" from outer space.

The February 1973 meeting of the UN Working Group on ERS demonstrated that world interest and anxiety with regard to this new technology are still growing. This may lead to substantial efforts within the next year or two to promote international understandings on the three topics outlined just above. The US, on the other hand, will find difficulty in deciding the degree to which it will be willing to make concessions to foreign pressures and desires in the absence of much firmer information on the potential economic value of ERS during the operational phase. Answers will be needed quite soon to such questions as: What will be the economic return to the US of ERS information derived from US territory? --from international waters? --from foreign territory? What will be the value to foreign nations of ERS information gathered from their own territory? --on a global basis? And what will be the value of ERS information to the LDC's as related to US foreign aid objectives?

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Further results from the ERTS and EREP programs combined with studies of the cost/benefit ratios now being performed under contract for the Department of Interior and AID should yield fairly soon at least preliminary estimates of these parameters. We will, however, need firmer policy guidelines before all such studies can be completed.

At the present time only the US and, to a lesser extent, the USSR possess the capabilities and experience to mount meaningful ERS programs. It is likely that the US lead in this area will predominate through the 1970's even if other nations become strongly motivated to establish competing systems.

Although it is clear that the space segment of any internationally-sponsored ERS system will for some years have to depend on the technology and the goodwill of the advanced space powers, there has been no dearth of proposals for internationalizing ERS services. Some of these proposals are summarized in a recently-prepared report of the UN Headquarters Staff (A/AC.105/C.1/WG.4/CRP.7 of December 6, 1972).

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OPTIONS ON DISSEMINATION OF ERS INFORMATION

Discussion

During the experimental phase of ERS, NASA has made specific arrangements to rapid dissemination of data from ERTS and EREP sensors to about 100 foreign scientific institutions to assist in cooperative projects related to ERS satellite imagery. Furthermore, ERTS and EREP space-acquired data is being made generally available to interested parties at equitable cost from a clearing house maintained by the Department of Interior at Sioux Falls.

Although these actions, taken together with numerous official USG expressions of intent that space be of service to all mankind, may be regarded as precedent-setting, the USG has no specific commitment governing policy for dissemination of ERS data during the operational period.

The basic question of whether the international community should be allowed to exercise a role in the dissemination of ERS information is analyzed in a later section (Organization Options) of this report. Prior to addressing the organizational aspects, it seems useful to consider the implications and consequences of various dissemination policies which the US could adopt under the assumption that this function remains under US national control. Thus all of the following

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Dissemination Options are incompatible with all of the Organization Options except Organization Option I.

The Dissemination Options are intended to explore two specific questions:

-- Whether US policies for dissemination of ERS data should be restrictive (in the hope of aiding the US economy) or whether they should be partially or entirely open (in the interests of foreign relations); and

-- The extent to which the US should recognize the growing demands from observed nations for proprietary control over ERS information derived from their sovereign territory.

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DISSEMINATION OPTION I: No routine dissemination of operational ERS information will be made outside the US Government.

Comment: The prohibition against "routine dissemination" would still permit flexibility in releasing information on a case-by-case basis to foreign or private American recipients when it can be demonstrated that such releases serve the national interest.

Advantages:

1. Might improve the US competitive position and balance of trade by providing assistance to some sectors of the US economy. For example, the USG could provide information helpful to US farmers and commodity markets re sales to countries experiencing crop failures. Guidance might also be provided to US firms seeking likely areas for new mineral explorations.
2. Could prove politically advantageous within the US by providing another example of substantial economic returns on the US investment in space.
3. Could still permit provision of services to other nations, including LDCs, in areas where no substantial economic loss to the US is involved.

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Disadvantages:

1. Would generate widespread international difficulties in the UN and other forums and reinforce those critics who are already asserting that US interest in space cooperation ceases as soon as space applications become involved.
2. Could exacerbate foreign fears and anxieties about US economic strength, and add to the sense of economic competition between the US and the rest of the world.
3. Would provide an incentive toward the development of foreign launch capabilities and competing ERS systems.
4. Would intensify assertions of proprietary rights of nations over their resources information and challenges to our "right to observe" foreign territories without permission.

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DISSEMINATION OPTION II: The US should retain exclusive or priority use of ERS information in a very limited number of cases where the information is of substantial significance to the US economy. With these occasional exceptions, ERS information will be made promptly available to countries whose territories are involved and, with their consent, to other countries.

Comment: The types of information which the US withholds or delays in releasing might be defined in terms of discrete areas of the earth's surface or, perhaps, in terms of information derived through particular types of sensing (e.g., infra-red, microwave).

Advantages:

1. Would permit the US to satisfy a large share of the foreign demand for ERS information while accommodating the growing foreign demand that ERS data not be provided to third nations in the absence of permission from the observed nation and while protecting the more substantial and vital American economic interests that may be affected by ERS.
2. To the extent permitted by negative foreign reactions, would provide maximum flexibility during the period when the value of ERS information, both

domestically and internationally, is still being assessed.

Disadvantages:

1. The possibility that transmission of some ERS information to observed states will be withheld or delayed could generate international difficulties over acquisition and proprietary rights to information of a severity close to those resulting from the choice of Dissemination Option I.
2. Would incur the remaining disadvantages of Dissemination Option I in direct proportion to the severity with which we restrict the flow of information.
3. Granting observed nations control over the further dissemination of ERS information could seriously impede this process. The clerical/cartographic problems arising from the constraints imposed by a sizable number of nations (e.g., in Europe and Central America where there are numerous small, contiguous nations), compounded by disputes over certain boundaries and territories (e.g., the Sinai, some of the Pacific islands) could make it necessary to discontinue all foreign dissemination of ERS data.

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DISSEMINATION OPTION III: The US will make ERS information fully available to nations whose territory is involved and, with their consent, to other nations.

Advantages:

1. As compared to Dissemination Options I and II, would go a long way toward allaying anxiety and suspicion that the US is using ERS information in ways disadvantageous to the observed nations.
2. Recognizing the proprietary control of ERS information by observed nations (with respect to third-country transfer) might lessen the adverse impact of the ERS program on nations having near-hostile relations with their neighbors (e.g., India/Pakistan; Arab States/Israel).
3. Would provide basis for assertion of US control over international dissemination of ERS information pertaining to US territory.
4. Could lessen pressures for establishment of competing ERS systems in Europe and elsewhere, and might remove part of the incentive of foreign nations for developing launch capabilities.

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5. Might enhance the opportunities of US industry to exploit resources abroad (at the invitation of the foreign nations) and add to the market for US business.

Disadvantages:

1. As in Dissemination Option II, granting observed states control over the further distribution of ERS information could introduce formidable administrative/clerical/cartographic obstacles and might also exacerbate international tensions over disputed territories and borders.
2. By forsaking the possibility of exclusive or priority US access to ERS information, could deprive US of competitive advantage with resulting contribution to our trade balance. Could generate serious criticism in Congress and in certain business sectors.
3. Could foreclose, or at least make very difficult, a later change to a more restrictive policy of the sort envisaged in Dissemination Options I and II.

DISSEMINATION OPTION IV: Continue the present practice of openly disseminating at equitable cost all ERS information.

Advantages:

1. By eliminating constraints arising from proprietary claims and other causes, would lead to the most rapid and least costly dissemination of ERS information on global basis, thus maximizing benefits of this technology on world-wide basis.
2. By allaying anxiety and suspicion that ERS information is being used for unilateral US economic advantage, would strengthen our legal position with regard to acquisition of such information.
3. Could largely eliminate pressures for establishment of separate ERS systems in Europe and elsewhere, and might decrease incentives in Europe and Japan for creating independent launch capabilities.

Disadvantages:

1. If subsequent developments in the operational application of ERS demonstrate that exclusive or priority access to this information would lead to substantial economic and trade advantages to the US, a change to a more restrictive dissemination

policy at that time might lead to more serious international difficulties, both legal and political, than would be the case if the US had kept open the possibility of restrictions along the lines of Dissemination Options I, II or III.

2. Failing to heed the growing demand that observed nations' permission be obtained prior to third-country dissemination might, in some cases, enhance competition and tensions between nations.

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OPTIONS ON THE ORGANIZATION OF OPERATIONAL ERS SERVICES

Discussion

Since ERS promises to become a global technology affecting--hopefully benefitting--all nations, it is understandable that there have already been a number of suggestions and proposals as to how the international community might play a role in its management. A proposal for step-by-step internationalization of ERS services under UN auspices was tabled by Argentina before the Legal Subcommittee of UNOSC in 1970 (Ref: A/AC.105/C.2/L.73).

At the February 1973 meeting of the UN Working Group on ERS, the US took a tentative and preliminary step toward internationalization of ERS data dissemination through its offer to provide, for distribution purposes, a master copy of data derived from its experimental ERS program to an international UN facility if one were to be established. It is believed that this offer was instrumental in calming, at least temporarily, a widespread unrest and anxiety on the part of most of the WG representatives with regard to the dissemination, proprietary and acquisition aspects of ERS.

The ERS system includes three distinguishable parts: the satellite-borne equipment for data acquisition, the computers and related equipment for data processing, and

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the facilities for dissemination of imagery and other processed ERS information. It is perfectly conceivable that one or more of these functions operate under international management while the remainder are under national control. There might, for example, be an internationally sponsored ERS satellite which would telemeter data to a variety of national or regional processing and dissemination facilities. Conversely, the satellite and processing facilities could remain under US national control while the dissemination function could be carried out through an international mechanism of the sort proposed recently to the UN Working Group.

The possible mechanisms for international management of parts or all of an operational ERS system (e.g., a new UN agency, an INTELSAT-type consortium) are not considered in this NSSM report. The Organization Options which follow are limited to evaluating the consequences of having some, all, or none of the operational ERS system under international control.

ORGANIZATION OPTION I: The operational ERS system will remain entirely under US national control.

Comment: Choice of this option would leave decisions as to program priorities and objectives, as well as the dissemination of particular information, strictly in the hands of the USG, and would lead quickly to the subordinate question

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of whether the US will encourage, tolerate or discourage ERS systems sponsored by other nations and by multinational and international organizations. The US attitude on this matter would be implemented through the extent to which the USG will be forthcoming in granting export licenses for ERS technology and in the provision of launch services.

Advantages:

1. Would promote maintenance of US technical supremacy in this field and would provide greater incentive for US development of new and more effective ERS techniques than would be the case for an internationally sponsored system.
2. Would leave the US with maximum flexibility in shaping the operational ERS system to promote US economic interests.
3. Might, unless the Soviets become more active, preserve for a decade or more the present status of serving as the principal supplier of ERS information to the world community, particularly to the LDCs.

Disadvantages:

1. Unless accompanied by a forthcoming dissemination policy along the lines of Dissemination Options III or IV could sharply intensify international anxiety

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about ERS which would be reflected in strengthened challenges to our legal position with regard to acquisition and proprietary rights, and would provide additional motivation to other nations (e.g., Europe, Japan) to develop their own launch capabilities and ERS systems.

ORGANIZATION OPTION II: Develop a national operational program for the acquisition and processing of ERS data, but encourage the formation of international machinery for the dissemination phase.

Comment: Under this option, the US would presumably retain responsibility for dissemination of ERS information to US users, but would transfer to the international mechanism the responsibility for all dissemination outside the US. In effect, this option would be in most respects equivalent to the combination of Organization Option I with either of Dissemination Options III or IV.

Advantages:

1. By giving the international community a substantive role in the ERS system would reduce fears that ERS is serving unilateral US economic interest and might reinforce our legal position with regard to acquisition of ERS data.

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2. While still retaining considerable flexibility in US use of ERS information, could be defended as consistent with statements of several US presidents and with both the spirit and letter of the Outer Space Treaty.

3. Would remove from the US and leave to the international community the difficult decision on whether to recognize the proprietary control of observed nations over ERS information (as discussed in Dissemination Option III) or whether this assertion of control should be ignored (Dissemination Option IV).

Disadvantages:

1. Would deprive the US of exclusive or priority access to ERS information acquired outside US territory, with possible consequent loss to the US economy and trade balance.

2. Would still leave us open to complaints from abroad that the US facilities for acquisition and processing of data are failing to produce quality, quantity and types of information required by other nations.

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ORGANIZATION OPTION III: The US would retain control of the satellite-borne segment of the operational ERS system as well as of such processing and dissemination facilities as are necessary to service internal US needs. All other processing and dissemination facilities would be placed under some form of international control.

Advantages:

1. By providing to the international community a still greater measure of influence and control than that implied in Organization Option II could further reduce anxieties and reinforce our legal position on acquisition.
2. Could still give the US, if it wishes, priority or exclusive access to ERS information pertaining to US territory.

Disadvantages:

1. Could still leave us subject to the disadvantages of Organization Option II (loss of priority access to ERS information from outside the US, and complaints over services furnished by our ERS satellite).
2. The international community is at present unequipped, either technologically or organizationally, to undertake

the task of providing its own data processing services (although this might be accomplished through a Comsat-type US corporation working under contract).

ORGANIZATION OPTION IV: All aspects of the operational ERS service, including those serving the US, will be placed under some form of international management (possibly a new UN agency, possibly an INTELSAT-type consortium).

Advantages:

1. Would eliminate, or at least remove from the US to international forums, all discussions of acquisition and dissemination practices as well as all complaints about adequacy of service provided to other nations.
2. Depending on arrangements arrived at for financing the international ERS service, might relieve the US of substantial expenditures that would be required under any of the other Organization Options.

Disadvantages:

1. If, as is quite possible, the international ERS service is inadequately financed or ineptly managed, could deprive the US of ERS information badly needed for both domestic and international purposes.
2. Could sharply reduce R&D efforts aimed at further improvements in ERS technology.

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TACTICAL OPTIONS ON THE RIGHT TO OBSERVE

The right of any nation to observe the earth from outer space has never been successfully challenged from the point of view of international law. This right is consistent with the OST and with the UN Charter and is essential if satellite systems having global coverage are to be applied to meteorological and other purposes.

No matter how great the international pressure, we cannot consider the surrender of the right to observe as a supportable option. Our task must therefore focus on tactical measures designed to abort international moves aimed at requiring the permission of states prior to their being observed.

Until recent months challenges to our right to observe have been sporadic and low-key, and it had been hoped by US officials that the problem could be avoided by the simple expedient of not calling attention to it. At the February 1973 meeting of the UN Working Group on ERS it became evident, however, that there is widespread international insistence on the need for developing legal principles applicable to ERS. Several nations, notably Mexico and Argentina, called specific attention to the legal aspects of data acquisition.

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Unless we can adopt tactics which succeed in diluting these anxieties, it seems quite possible that our determination to maintain the "right to observe" will soon be faced with a serious and widely supported international challenge. The Observation Options which follow are designed to explore various possible ways of meeting this objective.

OBSERVATION OPTION I: Accept no restrictions on the acquisition phase, but seek to alleviate international concerns by proposing certain concessions with regard to dissemination of ERS information, perhaps along the lines discussed in Organization Option II or in Dissemination Option III.

Advantages:

1. The proposals on data dissemination cited above may be justifiable anyway in terms of their role in enhancing the utility of ERS on a world-wide basis. If they are also sufficient to divert heat from the acquisition issue, the US expenditure in providing data services to the world community could prove to be an unusually good investment.

Disadvantages:

1. Concessions on data dissemination may not be sufficient to the task of defusing the acquisition

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issue, in which case the USG may have to fall back to the much more restrictive limitations discussed in the following Observation Options.

OBSERVATION OPTION II: Accept no legal restrictions on ERS acquisition, but make a formal policy statement to the effect that the US would not collect ERS data except at the invitation of the nations concerned.

Advantages:

1. Would allow us to make separate agreements with the countries affected concerning the uses to be made of the information collected, and might put us in a better bargaining position than would be the case if others felt we were anxious to carry out ERS observations of their territory.

Disadvantages:

1. Would impose all of the technical/administrative/-cartographic obstacles described in Disadvantage 3 to Dissemination Option II.
2. Could introduce a credibility problem with countries which doubt our ability or intention to refrain from observations of their territory.

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3. Might be interpreted by some as a de facto abandonment of the "right to observe", even though we specifically deny this, with consequences extending beyond the ERS program.

OBSERVATION OPTION III: If tactics such as those described in Observation Options I and II seem unlikely to achieve the desired result, abandon the ERS program at least as an overt activity.

Advantages:

1. This Option has nothing to recommend it except as a move of last resort, all else failing.

Disadvantages:

1. The many advantages, economic and otherwise, which ERS appears to offer the US and the world community would be lost for an indefinite period.

DRAFT 2/27/73

ANNEX

to

NSSM ON INTERNATIONAL COOPERATION
IN EARTH RESOURCE SURVEYING FROM SATELLITES

This Annex provides additional facts and considerations relevant to the policy options set forth in the NSSM paper on ERS, particularly with regard to:

1. USG Fund Requirements for ERS
2. Definitions
3. Legal Aspects of ERS
4. International Aspects of ERS

Attachment:

Policy Relating to ERTS
and EREP Experiments
(May, 1972).

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1. USG Fund Requirements for ERS

Source: Annual Federal Report on ERSP August 30, 1972.

(\$ in millions)

<u>Activity</u>	<u>FY 72</u>	<u>FY 74</u>	<u>FY 76</u>	<u>FY 78</u>
Spacecraft Development*	53	21	113	198
Other Activities**	<u>62</u>	<u>110</u>	<u>-133</u>	<u>148</u>
Total	115	131	246	346

*Spacecraft Development: DOI funding requirements in this category start with \$100,000 in FY 73 and rise to \$22 million in FY 76. Remaining requirements are from NASA.

**E.g., sensor development, a/c operations, data handling and applications, supporting research.

(\$ in millions)

<u>Agency</u>	<u>FY 72</u>	<u>FY 74</u>	<u>FY 76</u>	<u>FY 78</u>
NASA	106	79	160	255
Dept. of Interior	5	29	54	54
Dept. of Agriculture	2	8	14	15
Others *	<u>3</u>	<u>14</u>	<u>19</u>	<u>21</u>
Total	115	131	246	346

*EPA and Departments of Commerce and Defense

Since a share of NASA's funds will probably be spent for activities of operational significance, the proportion of total funding ascribed to the user agencies (e.g. 35% in FY 76) provides a lower limit to the operational aspect of the ERS program.

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2. Definitions

Experimental

The experimental phase of the ERS program is defined as the phase during which the principal goal of ERS activity is related to such R&D objectives as: the development of improved equipment and techniques for sensing, telemetering and data processing; the establishment of a sensor signature bank for identification of surface phenomena; and the determination of the types and economic values of information requirements which can be met through ERS.

Operational

During the operational phase of ERS, the principal goal of ERS activity will be the production of information required by various users (USG, foreign governments, private parties) in the fulfillment of these users' missions.

(The UN Working Group on ERS has noted that the definition of operational as applied to ERS systems is "a system resulting from the commitment to supply a space remote sensing service on a continuous and permanent basis, coupled with a commitment by interested users to use such a service on the same basis.")

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Remote Sensing of the Earth (ERS)

The JN Working Group on ERS has defined ERS as follows: "... remote sensing of the earth from space is a methodology to assist in characterizing the nature and condition of the natural resources, natural features and phenomena, and the environment of the Earth by means of observations and measurements from space platforms. Specifically, at present, such methods depend upon the emission and reflection of electromagnetic radiation."

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2. Legal Aspects of ERS

Fifteen years of space activities have, in our view, firmly established the "right of innocent passage" of both manned and unmanned space craft in near-space over sovereign territories. Although the Chicago Convention of 1944 established the principle of complete and exclusive sovereignty of every State to the airspace above its territory and territorial seas, without placing an upper limit to that sovereignty, the signatories of the Outer Space Treaty of 1967 renounced any claim to sovereignty over outer space. The altitude of the boundary surface separating national airspace from international outer space has never been defined, but it is generally accepted as lying somewhere between the highest altitude at which airplanes can maintain steady flight (about 20 miles) and the lowest altitude at which a spacecraft can be maintained in orbit (perhaps 80 miles).

ERS satellites in orbit are, therefore, beyond the territorial jurisdiction of subjacent States.

THE OUTER SPACE TREATY

The Outer Space Treaty (OST) is phrased in fairly general terms and makes no specific reference to the observation of earth from space. The freedom of all States to use, explore and conduct scientific investigations in space is asserted, however, by OST as long as

certain conditions are met. Such activities must be:

-- "for the benefit and in the interests of all countries." (Article I)

-- "in accordance with international law, including the Charter of the UN, in the interests of maintaining international peace and security and promoting international cooperation and understanding." (Article III)

-- "carried out "with due regard to the corresponding interests of all other States Parties to the Treaty..." (Article IX)

-- publicly reported, as to nature, conduct, locations and results "to the greatest extent feasible and practicable." (Article XI)

The OST also requires signatory States to "bear international responsibility for national activities in outer space...whether such activities are carried on by government agencies or by non-governmental entities..." This language, as well as that of the Liability Convention of 1971, is generally interpreted as applying only to physical damage, e.g. from reentering spacecraft.

THE "RIGHT TO OBSERVE"

The most basic legal question which might be posed with regard to ERS satellites is whether it is permissible for any State to acquire, without consent, information relating to the natural resources of other States.

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5.

The United States position that the peaceful observation of any part of the earth from outer space by any State is clearly permissible is supported by the 1967 Outer Space Treaty. That Treaty guarantees that outer space "shall be free for exploration and use by all States without discrimination of any kind ... " and that "There shall be freedom of scientific investigation in outer space." The United States position is further supported by the precedent of past practice, in that similar activities have been conducted without objection for more than a decade by meteorological satellites and by astronauts and cosmonauts. ERS sensors, like those aboard previous spacecraft, would be operating in outer space from beyond national territorial limits. The United States has always worked from the premise that an activity, not expressly prohibited by international law, is permissible.

It is generally understood that the implementation of an international agreement prohibiting ERS observations of States without their consent would pose such formidable obstacles that it could cause the abandonment of international ERS activities with consequent loss to all nations. Furthermore, such a prohibition would be almost impossible to verify.

The USG position regarding the "right to observe" has not been formally contested in the context of ERS, largely because

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of the experimental stage of the ERS programs. However, such "right to observe" has now been seriously questioned as it bears on both the acquisition and dissemination phases of the ERS technology.

During the February 1973 ERS Working Group meeting at the United Nations a comprehensive framework for future study of a full range of legal options touching the acquisition and dissemination phases of ERS was presented and enthusiastically received. The Soviet Union tabled five principles which inter alia would affirm a sovereign right of States to control their own natural resources and information concerning them; establish an obligation on the part of the sensing State to transmit information of the sensed State to the latter State under mutually acceptable conditions; prohibit the sensing State from making public or transmitting to a third State information regarding the sensed State without the prior consent of the sensed State.

A primary and widespread concern underlying these legal initiatives is that remote sensing technology can redound to the unilateral economic advantage of the launching State and disrupt commodities markets resulting in grave inequities in the economic relationship between the States affected.

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PROPRIETARY RIGHTS TO ERS

It appears inevitable that we will soon be engaged in serious international discussions of the extent to which an observed State controls the use and dissemination of resources information derived from its sovereign territory. Facets of this discussion will include:

-- whether the launching State can provide ERS information to third States without the consent of the observed State,

-- whether the launching State can withhold from the observed State any ERS information derived from the observed State's sovereign territory,

-- what restrictions would be acceptable regarding public dissemination of information likely to affect commodity or resource markets,

-- what obligations would be acceptable regarding dissemination of information privately to States concerned when such information would likely affect commodity or resource markets, and

-- whether establishment of correlative standards of protection of interests and damages as well as the consequent questions of liability and compensation would be acceptable.

The United Nations has reaffirmed the sovereignty of States over their natural resources in several UNGA resolutions adopted between 1952 and 1970. Proposals by several nations* that permission be obtained from observed States before information derived from sovereign territory is disseminated to other nations have so far been answered largely with the argument that the experimental phase of ERS is a "scientific investigation" and that we therefore have an obligation (under Article XI of OST) to inform the public and the international scientific community of the results.

While we have agreed that the practices of the experimental period of ERS need not set a precedent for the operational use of this technology, we have cautioned against addressing these admittedly difficult legal issues in the absence of fuller understanding and experience in the application of this new technology.

*The February 1973 meeting of the UN Working Group on ERS produced, in addition to the above-cited "five principles" tabled by the Soviets, statements by Sweden, Canada, France, Argentina and Mexico urging the need for developing legal principles applicable to ERS. The USUN report on this meeting noted, in this connection, that "In view of the near-unanimous contrary desire of other WG members, only the UK and Japan seemed to appreciate US motivation on this issue."

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Now that ERTS-1 is approaching its first anniversary of successful operation, it seems probable that the legal issues summarized above will soon need to be resolved. The sections of the NSSM paper on Dissemination Options and Observation Options are included to assist in formulating USG policy in this area.

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3. International Aspects of ERS

The basic pronouncement of policy governing the international aspects of ERS during its developmental phase is contained in President Nixon's address of September 18, 1969 to the United Nations General Assembly, in which he said, in part:

"Of all man's great enterprises, none lends itself more logically or more compellingly to international cooperation than the venture into space...

"For example, we are now developing earth resource survey satellites...Present indications are that these satellites should be capable of yielding data which could assist in as widely varied tasks as these: the location of schools of fish in the oceans, the location of mineral deposits on land, and the health of agricultural crops.

"I feel it is only right that we should share both the adventures and the benefits of space. As an example of our plans, we have determined to take actions with regards to earth resources satellites as this program proceeds and fulfills its promise. The purpose of those actions is that this program will be dedicated to produce information not only for the United States but

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also for the world community."

The President's statement extracted above served to confirm at the highest level a program of international cooperation in ERS which was initiated by the U.S. in 1965 and which has served to make the experimental phase of ERS a partner to the current programs of meteorological and environmental observations being carried out through the World Weather Watch and the Global Atmospheric Research Program.

The earliest cooperative projects were with Brazil and Mexico and were based upon aircraft remote sensing techniques. These two countries were chosen because of previous cooperative space efforts with NASA, and because one of the purposes of the cooperation was to help establish pilot projects whose frame of reference and character would be meaningful to other developing countries.

In other cooperative efforts, using aircraft, NASA has provided assistance to the Indian Space Research Organization in acquiring remote sensing data over areas of coconut palm blight in the state of Kerala. At the request of the Peruvian Government, the NASA P3A remote sensing aircraft acquired data over the severely earthquake-damaged areas of Peru in July 1970 to assist Peru with its damage assessment effort and to acquire data useful for

the development of the ERS Program. A similar effort was mounted in Guatemala following the Managua earthquake of December 1972. The UN Food and Agriculture Organization (FAO) and the Jamaican Government worked with NASA in acquiring and analyzing data of Jamaica in a demonstration project to study hydrologic and other applications of remote sensing data. The U.S. Government sponsored an International Workshop on Earth Resources Survey Systems in May 1971 at the University of Michigan. Representatives of 42 countries and 16 international organizations attended. Also in May 1971, Canada and the U.S. concluded an agreement under which the Canadian Department of Energy, Mines and Resources is cooperating with NASA in the ERS program by establishing an ERTS data acquisition station near Prince Albert, Saskatchewan and a data processing facility near Ottawa.

Other cooperative programs have been implemented by the Agency for International Development. These include:

- assisting a number of relatively less developed countries, including Mali, Lesotho, Guinea, Upper Volta, Niger, and Swaziland, in preparing proposals for participating with NASA in the ERTS program;

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- supporting two-week regional remote sensing training seminars in the Republic of Mali and the Philippines and a 4 week remote sensing course at the EROS Center in South Dakota for participants from developing countries, to broaden understanding of the technology and techniques for ERTS image interpretation;
- implementing, in cooperation with the Government of Indonesia, a multispectral aircraft remote sensing program designed to complement ERTS investigations; and
- conducting a comprehensive remote sensing training program in Thailand to give impetus to Thai earth resource investigations and applications.

Shortly following the successful launch of ERTS-1, the Government of Brazil announced that it too would establish its own national facilities for the acquisition and processing of ERS data.

In 1970 NASA issued Announcements of Flight Opportunity for national and international participation in ERTS and EREP data analysis experiments. Over 700 proposals were received, of which more than 125 came from 38 foreign nations and three international organizations. Ninety of these foreign proposals

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from 37 nations and two international organizations have been accepted for ERTS-1. Sixteen countries and one international organization have been notified of NASA acceptance of their proposals for use of data collected through the Earth Resources Experiment Package (EREP) to be flown on SKYLAB.

In addition to these arrangements made specifically for investigators, ERTS and EREP space-acquired data are being made generally available to all interested parties at equitable cost through the Department of Interior's data center at Sioux Falls.

A statement of USG policy relating to ERTS and EREP experiments, spelling out the arrangements summarized above, was distributed to members of the UN Working Group on ERS in May, 1972. A copy of this statement is appended as Attachment 1 to this Annex. At the February 1973 meeting of this Working Group, the U.S. expanded its offer of cooperation by stating that it would provide for distribution purposes a master copy of data derived from its experimental ERS program to an International UN facility if one were to be established.

The basic objectives of the ERS program during its early, experimental phase are to promote the optimum development and applicability of this new technology, and to enhance world understanding and acceptability of ERS. It is important to the achievement of these goals (1) to gain access to ground

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truth information beyond our borders, (2) to take advantage of competence abroad, and (3), above all, by taking measures designed to ease foreign apprehensions and to promote world understanding of ERS, to forestall (or at least delay) any international movement which might infringe on the use of outer space platforms for the acquisition of information pertaining to the earth's surface.

The policies adopted for the experimental period of ERS seem to be fulfilling their objectives.

Adequacy of Present Policies

There is a question of whether our present international policies and practices for ERS, for all of their demonstrable success during the experimental period, can be transferred in toto into the operational phase without incurring serious challenges both at home and abroad. The timely acquisition of comprehensive information relating directly to the world's resources and agricultural productivity will probably have massive economic and environmental (and therefore political) implications. The cash value of this information is impossible to assess at the present stage of ERS development, but estimates have ranged into the billions of dollars, mostly associated with the production of food, fiber and forest products.

With so much at stake, it seems inevitable that the governments of many nations (including the USG) will muster their best arguments in an effort to secure for their own nation the maximum possible benefits of this new technology. The UN bureaucracy is prepared to come forward with proposals for an internationalized ERS service. A relatively mild proposal of this sort was tabled by Argentina in 1970, and the UN Working Group on ERS recently decided to recommend the establishment of a Task Force to identify and report on alternatives for the dissemination and optimum utilization of ERS information. Included in the Task Force's assignment would be the technical, organizational and legal aspects of an international distribution center or centers.

Although there will be advantages to the foreign relations of the US in maintaining the policy of free and prompt dissemination of ERS information as we move into the operational period, there may also arise significant pressures within the US to restrict--or at least delay--the release of information in cases where exclusive or priority access could yield competitive advantage.

A frequently cited hypothetical example relates to deep-sea fisheries. It is conceivable that ERS techniques will develop to the point of yielding nearly real-time information on such parameters as plankton content and temperature gradients in the open sea, major factors in determining fish population.

It is also conceivable that the provision of such information on an exclusive basis to our fishing fleets will be instrumental in elevating our fishing industry from its present economic woes.

Similar considerations could apply to information providing advance indication of any major perturbation in world production of food or fiber. For example, there would be strong incentives to defer the public knowledge of an impending failure of the American corn crop until steps could be taken to discount at least part of the economic impact of such a failure.

Attitudes of foreign nations will certainly be motivated by considerations of self-interest, aggravated by resentments over the fact that the US already consumes such a large share of the world's resources. Such attitudes unquestionably lie behind many of the already-noted demands of UN delegates for the establishment of "legal principles applicable to ERS."

Bases for Policy in the Operational Period

The many questions which must be considered in arriving at a balanced policy designed to optimize the benefits to the U.S. from its international program in ERS fall into four general groups:

1. Value of ERS information. In order to assess the degree to which the U.S. will wish to make concessions to foreign requests with regard to information dissemination and the other questions raised below, it is of great importance to obtain as quickly as possible estimates of the following three parameters: (a) the value to the U.S. of operational ERS information gathered on a global basis; (b) the value to the US of ERS information gathered only over U.S. territory and international waters; and (c) the value to foreign nations as a group of ERS information gathered on a global basis.

ERTS-A was launched in late July 1972 and immediately started producing data of a quality equalling or exceeding expectations. NASA officials believe that a substantial number of investigations based on these data will be completed in 1973. On the basis of these, taken together with studies of cost-benefit ratios being performed on contract for the Department of Interior, it should be possible to derive fairly soon at least preliminary estimates of the parameters listed above. We will, however, need firmer policy guidelines before all such studies can be completed.

2. Organization. In the long term, the world's ERS facilities may include satellites under the control of international organizations (perhaps a new UN space agency) as well as satellites owned and operated by foreign nations. U.S. policy on such matters as licensing the export of technology and providing launch assistance for satellites will be a significant factor in determining how rapidly the U.S. ceases to play a virtually exclusive role in this field. Another major factor in determining the growth rate of competitive systems will be the extent to which the U.S. operational ERS program satisfies foreign needs and eases foreign apprehensions.

3. Right to Observe from Outer Space. See the above section on legal aspects of ERS. The right to observe the earth from space platforms without the permission of the subjacent State has not yet been seriously contested. It is probable, however, that such a challenge will arise in a future debate on operational ERS, perhaps in the form of a proposal that this right be reserved to satellites sponsored by international organizations or to satellites conforming to certain specified rules regarding information dissemination. While there is little question that the USG will seek

to retain the right to observe from outer space, decisions must be made on the tactics we will use in defending the right if it is subjected to serious challenge.

4. Dissemination of ERS Information. There seem to be three basic considerations which will determine policy with regard to the international dissemination of ERS information:

(a) Whether the observing party will be permitted to withhold or defer dissemination.

(b) Whether the observed State will be permitted to exercise any proprietary control over information derived from its sovereign territory, and

(c) Whether the rules for information dissemination will be the same for States as for international organizations.

Drafter:
RTWebber (x22432)
February 27, 1973

In the interests of assuring an optimum experimental program for earth resources surveying via space satellite, and in order to maintain the scientific integrity of this program, the following guidelines will be applied by NASA and the other US Government agencies concerned in implementing the experimental program.

1. NASA will evaluate all foreign ERTS and EREP experiment proposals, if they are endorsed by a sponsoring government agency (or equivalent) in the proposer's country or by a competent inter-governmental body, and will apply the same tests of scientific validity as for US-originated proposals.
2. Foreign investigators whose proposals are selected must be funded by their own national institution or sponsoring international organization. There will be no exchange of funds, i.e., NASA and the sponsoring agency will each bear the cost of discharging its respective responsibilities.
3. In general, NASA expects that most investigators should obtain ground-truth to verify the results of their scientific analyses. If an investigator requires air-borne or ground access to the territory of a country other than his own to obtain ground-truth, that access must be approved by a government agency of the country concerned before the experiment can be approved. All proposals involving data concerning another country, whether originated by US or foreign investigators, will be subject to the same considerations.
4. In view of the experimental and scientific character of the ERTS and EREP programs, proposals from investigators sponsored by commercial entities will be processed and evaluated on the same basis as other proposals.
5. Advance coordination with NASA is required before discussing or initiating any foreign relationship in the conduct of a proposed or selected experiment, e.g., through the addition of domestic co-investigators to foreign experiments or the addition of foreign co-investigators to domestic experiments; advance approval from NASA is required before commitment to such collaboration. When approved, cooperative

investigations between US and foreign investigators will be conducted on a no-exchange-of-funds basis in which the foreign sponsoring agency supports the activity of the foreign investigator and the US sponsoring agency supports the activity of the US investigator.

6. In addition to the arrangements made specifically for investigators, ERTS and EREP space-acquired data will be made generally available to interested parties at an equitable and nondiscriminatory cost determined under US costing arrangements.

7. In order to facilitate availability of ERTS and EREP space-acquired data on a non-discriminatory basis, maximize knowledge of and benefit from these programs and encourage foreign, as well as domestic, participation in on-going earth resources surveying activities:

- a. NASA will prepare and distribute a list of approved experimenters indicating the sponsoring organization, purpose of study, and test site involved. This list will be made available to interested governments and international organizations as well as to other interested parties.
- b. Catalogues or accession lists of ERTS and EREP space-acquired data placed on file will be prepared and distributed periodically to interested governments and international organizations as well as other interested parties. The distribution to governments and international organizations will be without charge. Distribution to others will be at an equitable and nondiscriminatory cost.

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